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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
FASTOVSKY, LEONID M	
ART UNIT	**PAPER NUMBER**
3742	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/831,887	ITO ET AL.	
	Examiner	Art Unit	
	Leonid M. Fastovsky	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-9,11,12,17-24 and 27-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-9,12,17-24 and 27-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 9, 21-23, 29-31, 33-36 and 46 are rejected under 35 U.S.C. 102(b) as being unpatentable over Bogdanski et al (6,150,636).

Bogdanski discloses substantially the claimed invention including a nitride ceramic heater (col. 6, lines 22-23), comprising a ceramic substrate 14 and a heating element 17 disposed opposite to the working-heating surface 23, the working surface having roughness preferably not more than 100 micron from the ideal plane which inherently corresponds to Rmax roughness of 100 micron (col. 6, lines 45-56). It would have been obvious to one having ordinary skill in the art to modify Bogdanski's invention by having roughness of the work-heating surface 23 in the range from 20 micron to 200 micron using JIS B 601 standard as a choice that would have been determined by the user having a desired result in mind.

As for claims 3-4, 31 and 35-36, Bogdanski discloses the nitride ceramic substrate containing non-dominant Fe, Cr and others elements (col. 8, lines 3-15)

As for claims 29-31 and 33, Bogdanski inherently has a space occupied by gas-air between the work-heating surface 23 and the work 25 because of the same work-heating surface roughness between 20 and 200 micron.

As for claims 34-36 and 46, the ceramic heater comprises a supported body 20, 21 to hold the work 25 to be heated.

3. Claims 5, 7, 11, 24, 32 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Natsuhara et al (6,078,027).

Bogdanski discloses substantially the claimed invention including the thickness of the substrate between 2 and 4 mm (col. 6, lines 26-27), but does not disclose that a nitride ceramic contains one of the elements selected from Na, B, Y, Li and Ca and weight of elements Y, Ca is not less than 0.1%. Natsuhara discloses a ceramic heater 1 having a ceramic substrate 1a and a weight of elements **Ca and Y** to be in a range of 2% to 5% (col. 6, lines 35-41 and Table 1). It would have been obvious to one having ordinary skill in the art to modify Kawada's invention to use elements Y or Ca by weight as taught by Natsuhara in order to prevent cracking of the ceramic substrate (Abstract).

As for claim 37, the ceramic heater comprises a supported body 20, 21 to hold the work 25 to be heated.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Yamada et al.

Bogdanski teaches substantially the claimed invention, but does not disclose that a weight of elements Na and B is not less than 0.05 ppm. Yamada et al teaches in Col. 4, lines 42-49 minimizing the amount of metal and other elements belonging to Groups 1a VIIa, VIII, Ib and IIb and IVb respectively to less than 100 ppm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use

Na or B in bogdanski's invention in the amount of not less than 0.05 ppm in order to control a volume of resistivity as taught by Yamada (Abstract).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Natsuhara and further in view of Yamada et al.

Bogdanski in view of Natsuhara discloses substantially the claimed invention, but does not disclose that a weight of elements Na and B is not less than 0.05 ppm. Yamada et al teaches in Col. 4, lines 42-49 minimizing the amount of metal and other elements belonging to Groups 1a VIIa, VIII, Ib and IIb and IVb respectively to less than 100 ppm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Na or B in the invention of Bogdanski in view of Natsuhara in the amount of not less than 0.05 ppm in order to control a volume of resistivity as taught by Yamada (Abstract).

6. Claims 27-28, 38-40, 42-44 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Ushikawa.

Bogdanski discloses substantially the claimed invention, however he does not disclose a semiconductor wafer that is heated while being supported by pins at a distance of 1 micron to 5000 microns (5 mm) apart from the work-heating surface of the ceramic heater. Ushikawa discloses pins 41, 42 and 43 supporting a wafer W at a distance of from 0.2 mm to 2 mm (Col. 4, lines 30-44). It would have been obvious to one having ordinary skill in the art to modify the invention of Bogdanski to use supporting pins at a distance from 1 micron to 5000 micron in order to improve heating of wafers as taught by Ushikawa (Abstract).

7. Claims 41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Natsuhara and further in view of Ushikawa.

Bogdanski in view of Natsuhara discloses substantially the claimed invention, however he does not disclose a semiconductor wafer that is heated while being supported by pins at a distance of 1 micron to 5000 microns (5 mm) apart from the work-heating surface of the ceramic heater. Ushikawa discloses pins 41, 42 and 43 supporting a wafer W at a distance of from 0.2 mm to 2 mm (Col. 4, lines 30-44). It would have been obvious to one having ordinary skill in the art to modify the invention of Bogdanski in view of Natsuhara to use supporting pins at a distance from 1 micron to 5000 micron in order to improve a process of wafers heating as taught by Ushikawa (Abstract).

8. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Nozaki et al.

Bogdanski discloses substantially the claimed invention, but does not disclose a thermal conductivity of a ceramic substrate. Nozaki discloses that the thermal conductivity of a ceramic heater is about 170 W/mK (Col 7, lines 1-5). It would have been obvious to one having ordinary skill in the art to modify Bogdanski's invention to include a thermal conductivity in a range from 130 to 200 W/mK because the aluminum nitride is the highest in these thermal coefficients as taught by Nozaki.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdansi in view of Natsuhara and further in view of Nozaki.

Kawada in view of Natsuhara discloses substantially the claimed invention, but does not disclose a thermal conductivity of a ceramic substrate. Nozaki discloses that the thermal

conductivity of a ceramic heater is about 170 W/mK (Col 7, lines 1-5). It would have been obvious to one having ordinary skill in the art to modify the invention of bogdanski in view of Natsuhara to include a thermal conductivity in a range from 130 to 200 W/mK because the aluminum nitride is the highest in these thermal coefficients as taught by Nozaki.

Response to Arguments

10. Applicant's arguments with respect to claims 1-5, 7-9, 11-12, 17-24 and 27-48 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid M. Fastovsky whose telephone number is 571-272-4778. The examiner can normally be reached on M-Th. 8.00 am -6.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leonid M Fastovsky
Examiner
Art Unit 3742
12/14/05

lmf

ROBIN O. EVANS
PRIMARY EXAMINER
12/21/05